

REMARKS

The application consists of claims 1-109, 113-142 and 144-164 of which claims 1-10, 19-21, 23-25, 28, 30, 34-36, 39, 40, 42, 43, 50-60, 66, 70-74, 76-81, 83-86, 88-90, 93-102, 113-124, 129-135, 138, 144, 148, 152 and 154 are amended. Claim 143 is now cancelled and claims 159-164 are new.

Claim objections

Claims 1 and 123 are objected to since the recitation "in communicating" should be replaced with "in communication". Applicants amended the recitation as suggested by the Examiner. The claims were further objected to since it is unclear how the system is "calculating an image" as recited in the preamble of the claims. Applicants amended the claims to recite "A system for constructing an image". It is believed that the objections are overcome by these amendments. The amendments are cosmetic only and do not change the scope of the claims.

Claims 1, 7, 24, 30, 42, 71, 72, 77, 83, 89, 123 and 123 are objected to since the recitation "designed and" should be removed according to the Examiner. Applicants have removed the recitation from the claims and from claims 25 and 36 where the recitation was also found. It is submitted that the removal of the recitation is a cosmetic change in the claim and the scope of the claims has not changed by this amendment.

Claims 2-6, 19, 22 and 39 are objected to since they fail to further limit the structure of the claimed invention. Applicants have rephrased the wording of the claim in order to explicitly define the structural definitions. The amendments to the claims are cosmetic and are not intended to change the scope of the claims.

Claim 6 is objected to since there is no antecedent to the recitation "the image acquisition". Applicants amended the claim in view of the objections above such that the recitation is not present in the claim anymore.

Claims 8-10, 13, 133-135 and 138 are objected to since the recitation "constructed as" should be removed. Applicants removed the recitation from the claims as requested by the Examiner and submit that the amendment to the claims is cosmetic only and is not intended to change the scope of the claims.

Claim 20 is objected to since it is unclear what is being set forth by "a visual co-presentation". In response thereto, claim 20 is amended to make explicit what was already implicit, namely that the claimed system is configured for visual co-presentation of the radioactive emission probe.

Claims 21, 34, 35, 40, 81, 124, 129-131, 148, 152 and 154 are objected to since the recitation "adapted" should be replaced with "configured". Applicants have amended the recitation as suggested by the Examiner in the objected claims and in claims 23, 28 and 70 where the recitation was also present.

Claim 50 is objected to since there is no proper antecedent to the term "the first image acquisition". In response thereto, applicants amended the recitation to "the construction of the first image" which finds antecedent basis in parent claim 43. The amendment is cosmetic only and is not intended to change the scope of the claims.

Claims 51-60, 66, 70, 73, 74, 76, 78-81, 84-86, 88, 93-102 and 113-122 are objected to since they fail to further limit the claimed method and set forth nothing than structural limitations which do not affect the steps recited therein. Applicants have rephrased the claims in order to explicitly define the method definitions. It is submitted that the amendments are entered in order to overcome the objection and are not intended to change the scope of the claims.

Claim 144 stands objected to since the recitation "a first and a second" should be replaced with "first and second". Applicants amended the claim as requested by the Examiner.

It is believed that the objections are overcome in view of the above amendments.

Claim rejections – 35 USC 112 and 102

Claim 143 stands rejected under 35 USC 112 since the scope of the claimed invention is unclear. Claim 143 stands further rejected under 35 USC 102. Applicants cancelled the claim without prejudice and submit that the rejections are now moot.

Claim rejections 35 USC 103

Claims 1-6, 8-39, 41-91, 93-109, 113-142 and 148-158 stand rejected under 35 USC 103(a) as being unpatentable over Krakovitz (US 6,212,423) in view of Daghighian (US 6,510,336).

The Examiner states in the rejection that Krakovitz' teaches an endoscopic system for simultaneous ultrasound imaging and radioactive emission detection, the system including a multiple collimator and a detector and a data processor configured to integrate the image and emission detection information in a three-dimensional image. According to the Examiner, Krakovitz does not teach position tracking for the probes, however, this is taught by Daighighian.

Applicants respectfully disagree with the rejection and submit that the Examiner has not provided a *prima facie* case of obviousness since the Examiner did not show where all the claimed elements are disclosed in the prior art. Before discussing the rejection, applicants respectfully submit that the rejection provided by the Examiner was generally formed and did not identify any of the plurality of independent claims or dependent claims at all.

For example, independent claims 90 and 123 recite that the radioactive emission probe has a wide-aperture collimator. The Examiner did not show where a wide aperture collimator is found in the art. Applicants will not burden the office with reciting all of the claimed features, however, it is submitted that except for the features referenced above, none of the claimed features have been referred to by the Examiner.

Applicants respectfully quote from MPEP 706.02(j) (relating to obviousness rejections): "It is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given fair opportunity to reply." Accordingly, applicants respectfully request that if the Examiner does not find the application allowable in view of the present amendment and remarks, a detailed reasoning for rejecting the claims will be provided so that applicants will receive a fair opportunity to respond. In any case, a final rejection would not be appropriate as a next action.

Claims 1, 43, 90, 123, 148 and 152 are the only independent claims in the present rejection. In view of the rejections, applicants have amended the claims to make implicit what was already implicit, namely that the image is reconstructed "using a plurality of radiation detections received from the probe and the position of the probe during said detections as received from the position tracking system", as in claim 1. The rest of the independent claims were amended to add similar language. Support for the amendments can be found for example in paragraphs 176-180 of the application as published.

It is submitted that neither Krakovitz, nor Daghighian teach the recited feature. In Krakovitz, the system provides a plurality of images, each including anatomical (ultrasound) and functional (nuclear medicine) data, see col. 2, from line

58. However, Krakovitz does not teach constructing an image from a plurality of detections of the probe and the position of the probe during said detections.

Daghighian does also not teach the claimed feature. Daghighian teaches monitoring the position of a detector and displaying a visual image of the recorded tissue with a radiation count from the labeled tissue disposed visually thereon. Thus, Daghighian displays a single radiation detection at a time and does also not construct an image based on a plurality of detections. Accordingly, Daghighian does not construct an image as claimed.

Applicants further submit that even if one of ordinary skill in the art would combine the references (and applicants do not insinuate one would!), the combination would not result in the claimed invention. The combination would at most display a plurality of images, as taught by Krakovitz using position information as taught by Daghighian. It is further submitted that a person of ordinary skill in the art would not combine the references. As described above, the images of Krakovitz display ultrasonic anatomical data. A person of ordinary skill in the art would suggest against adding an additional visual image of the recorded tissue, this would only complicate the procedure and would not provide any significant benefit.

Thus, applicants submit that the claims are patentable over the cited art. The dependent claims are patentable at least by virtue of their patentable parent claims.

Applicants have added new claims 159-164 which depend on independent claims 1, 43, 90, 123, 148 and 152 respectively. New claim 159 recites "the data processor being configured for tomographically reconstruct the image." New claim 160 is a method claim and recites a similar feature. Support for claims 159 and 160 can be found at least on paragraphs 169 and 170 of the application as published. Neither Krakovitz nor Daghighian teach tomographic reconstruction of an image.

New claim 161 recites "constructing a first image using a deconvolution algorithm." Claim 162 is an apparatus claim and recited a similar limitation. Support for claims 161 and 162 can be found at least in paragraphs 101 and 105 of the application as published. It is submitted that neither Krakovitz nor Daghighian use deconvolution algorithms for reconstructing an image of the source.

New claims 163 and 164 recite "the data processor is configured for constructing the image wherein the intensity of the image is a function of the time intervals between the plurality of images received from the probe." Support for new claims 163 and 164 can be found at least in paragraph 96 of the application as published. It is submitted that the brightness of the images of Krakovitz and Daighighian do not depend on the function of time intervals between the detected radiation, simply because each image is based on a single detected radiation.

Claims 144-147 stand rejected under 35 USC 103(a) as being unpatentable over Krakovitz in view of Daghighian and Tournier (US 6,680,750).

According to the Examiner, Krakovitz and Daghighian teach all of the claimed featured except for obtaining count rates for first and second photon energies, which is taught by Tournier. Applicants respectfully disagree and submit that the Examiner did not provide a *prima facie* case of obviousness since the Examiner did not show where all of the claimed features is found in the art.

For example, independent method claim 144 recites "determining depth information of the radioactivity emitting source from the surface of the body, based on the different attenuations of the first and second photon energies." Applicants respectfully submit that after reviewing Tournier, the recited feature was not found in the document. Tournier does not determine the depth information of the radioactivity

emitting source but rather uses the obtained count rates for processing several simultaneous detection events.

Thus, claim 144 is patentable over the cited art. Claims 145-147 are patentable at least by virtue of their patentable parent claim 144.

Double patenting

Claims 1-10 and 113-158 stand provisionally rejected on the ground of non-statutory obviousness type double patenting as being unpatentable over claims 1-8, 17, 23, 26-28, 34, 37-40, 46, 49, 62, 63, 72, 77, 122 and 133-148 of copending application no. 09/727464.

Claims 1-10 and 113-158 stand provisionally rejected on the ground of non-statutory obviousness type double patenting as being unpatentable over claims 1-311 of copending application no. 10/343,792.

Claims 1-10 and 113-15 stand provisionally rejected on the ground of non-statutory obviousness type double patenting as being unpatentable over claims 1-82 of copending application no. 10/836,223.

These rejections are provisional rejections as the conflict claims have not in fact been patented. Applicants will respond to these rejections when the cited applications will be allowed.

Conclusion

In view of the present amendment and arguments it is submitted that the claims are patentable over the prior art. A notice thereof is respectfully awaited. In the event that the Examiner cannot issue such a notice, it is respectfully requested that a detailed reason for rejection of all of the rejected claims will be provided in order to give applicants a fair opportunity to respond. As noted above, a final office action would not be appropriate as a next action.

Respectfully submitted,



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Enclosures:

- Petition for Extension (Two Months)
- Additional Claims Transmittal Fee